Edition 28/07/2002

AXIAL FILTERS

USER MANUAL

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INTRODUCTION

It is widely known that a pump directly sucking oil from the vehicle oil tank, without a correct filtering device, can come in touch with impurities able to cause damage to the pump, the distributor and the valve. In order to protect the life of the pump and the hydraulic system, it is necessary to introduce the proper filter against the smallest oil impurities

FILTER RANGE

We have released a small size filter series which can easily be installed in the hydraulic circuit according the technical specifications of the filter type

This "**PATENTED**" filter series, thanks to the peculiar axial shape and to the high efficiency, allows the filtering of big oil flow with very limited pressure drops.

"AS" Filter series - Suction

Up to now, the most used standard was to fit the filter on the return line or on the outlet line of the pump of the hydraulic circuit. However, these two solutions don't protect the pump from potential contact with harmful impurities, because they can be stopped by the filter only after they have passed along the hydraulic circuit.

Installing the suction filter is the safest solution as it grants the separation of harmful particles before the oil comes in touch with mechanical parts of the system.

If not correctly designed, the suction filter might bring about the pump cavitation, due to the increase of the pressure drop caused by the filter itself

"**AS**" filter series has been designed to avoid cavitation.

Basically, these filters, thanks to the peculiar axial shape and to the safety device which they are provided with, definitely avoid possible pump cavitation problems.

The filter, actually, is provided with a switch that, after reaching a fixed depression value, closes an electric circuit showing the operator the obstraction condition of the filter cartridge and requiring a maintenance action.

"SC" Filter series - Return

This installation type is the most used standard, being the cheapest solution, but it is technically the less safe because it allows the separation of the harmful particles from the oil only after they have passed along the complete circuit.

The benefit of using a return filter is that, considering the same oil flow, you can use a smaller filter in comparison with the required suction filter, as the pump cavitation problem hasn't to be faced. Moreover, filtering device with higher filtering degree can be used.

"**SC**" filter series has been designed to allow the filtering of big oil flows with small sizes and cheap prices.

The filter series, actually, is provided as well with a switch that, after reaching a fixed depression value, closes an electric circuit showing the operator the obstraction condition of the filter cartridge and requiring a maintenance action.

"PR" Filter series- In-line

Proper filtering on the pressure line is offers an excellent degreee of protection to the section of the hydraulic circuit which is following the pump. See Picture 1 (Hydraulic circuit)

This kind of filter can reach a very high degree of filtration with limited dimensions and cost in comparaison to currently available competition's products.

"**PR**" filter series has been designed to allow the filtering of big oil flows with small sizes at high pressure.

PRESSURE DROP "ΔP"

The pressure drop value in any branch of the hydaulic circuit, once the flow, the fluid type and climatic conditions are known, mainly depends on the following factors :

- **Distributed pressure drops "**$\Delta p_{d\ (distrib.)}$" (depending on the lenght of the pipe, on the material of the pipe, on the diam.,etc.)
- **Concentrated pressure drops** "$\Delta p_{c(n)}$" (depending on sudden change of the pipe section, on small bending radius of the pipe, on valves, filters, or any controlling flow device)

The pressure drop value "Δp" can be increased in two ways:

- **Oil flow being equal**, the more we introduce valves, filters and so on (the concentrated pressure drops are increased) or we use longer pipes and/or of smaller diam. (the distributed pressure drops are increased) the more we get higher pressure drop values "Δp"

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- **Geometric configuration being equal,** i.e. once the hydraulic circuit is defined (pipe, filter valve, oil, etc. being equal) thebigger is the oil flow the higher is the pressure drop value "Δp".

As a result, the pressure drop is, approximately, equal to the sum of the distributed drops and of the concentrated drops

$$D_p = D_{pd\ (distributed)} + D_{pc(filter)} + D_{pc(valves)} + \ldots + D_{pc(n)}$$

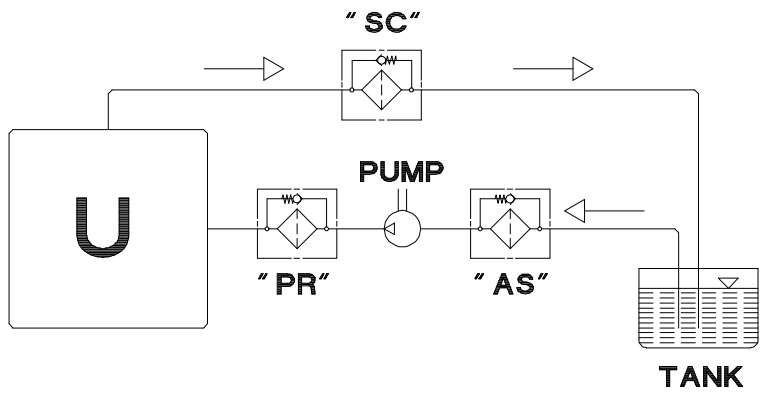
For instance, in the suction branch, the one connecting the oil tank to the pump,:

$$D_{pa= p(oil\ tank) - p(suction)} = D_{pd\ (distributed)} + D_{pc(filter)} + D_{pc(fittings)}$$

where:

p(oil tank) = is the absolute pressure in the oil tank
(if the oil tank isn't pressurized P(oil tank)= 1 ata)

p(suction) = is the absolute pressure value at the inlet hole of the pump



Picture 1 (Hydraulic circuit)

"AS" = Suction Filter
"PR" = Inline Filter
"SC" = Reutrn Filter
"U" = System

SPECIAL FEATURES OF "AS" – "SC" – "PR" SERIES

The "AXIAL" filter series designed by GHIM Srl has the following special features:

- The peculiar shape of the axial filter doesn't cause any abrupt directional change of the fluid passing through the filter. As a result, we have a clear reduction of the concentrated pressure drops ***Dpc(filter)***.
- During the project stage, special care has been dedicated to the filter maintenance: the filter cartridge can be regenerated (by means of washing or blowing) getting an economical saving and a reduction of the probelm represented by the toxic dangerous waste
- The threaded flanges allow a further saving during the filter assembling, because, in comparison with standard filters, the intermediate fittings are not required.
- The peculiar filter profile allows perfect fitting directly to the tank or to the pump without the need of supporting flanges or other particular structure.

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"D90 AS" - "D60 AS" SUCTION FILTERS

Picture 2 (Suction fliter "AS" series)

TECHNICAL SPECIFICATIONS

HOW IT WORKS

As shown in the Picture 5 (Position of filter "AS" series), the oil comes in from the threaded flange "**1**", passes through the external section of the filter cartridge, lapping the three magnets "**2**" placed at 120° having the task to capture the metal particles in the oil. The oil runs through the cartridge with a centripetal movement until it is collected in the output flange "**6**".

SWITCH

Since the concentrated pressure drop "$\Delta p_{c(filtro)}$" increases in time due to the filtering action of the cartridge, a switch set for a depression of **–0,3 bar** has been introduced, so that it can show the operator the obstraction condition of the filter cartridge. It is a depression type switch with a normally open circuit "**NA**". When the depression value downstram the filter exceeds the set pressure, the switch closes the circuit and allows the current to pass. (Voltage 12-24V DC)

BY-PASS VALVE

A further safety is represented by the by-pass valve: when a -0,4 bar depression is reached in the filter, it opens allowing the oil to flow towards the pump. Thanks to this by-pass valve, we can state that in any case the concentrated pressure drop of the filter can't be greater than **0,4 bar**.

PRESSURE DROP CURVE OF "D60 AS" AND "D90 AS" FILTERS SERIES

From the tests effected in our laboratory, we got the following pressure drop curves measured at the filter output section "$\Delta p_{c(filtro)}$"

- Picture 3 (Pressure drop filter "D60 AS")
- Picture 4 (Pressure drops filter "D90 AS")

Present diagrams are referred to the following testing conditions:

- Oil viscosity: ISO WG46
- Temperature 25-30°C
- New cartridge.
- Pressure levels measured in the inlet and outlet sections of the filter.

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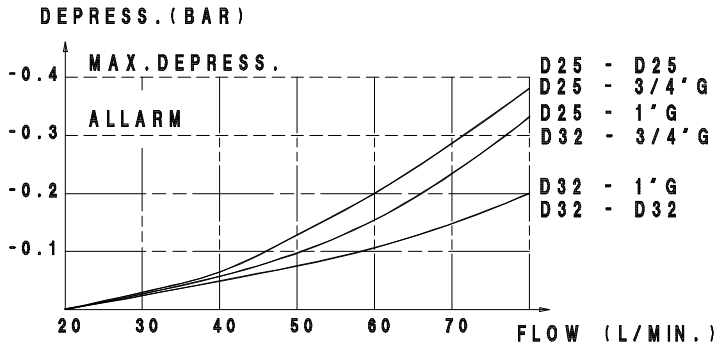
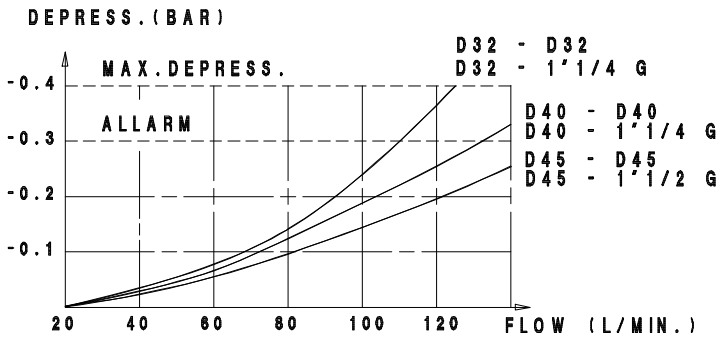


Picture 3 (Pressure drop filter "D60 AS")

Legend:

D25 – D25 = pipe diam. 25 mm at one side and pipe diam. 25 mm at the other side

D25 – 1"G = pipe diam. 25 mm at one side and threaded fitting 1"Gas at the other side



Picture 4 (Pressure drops filter "D90 AS")

Legend:

D40 – D40 = pipe diam. 40 mm at one side and pipe diam. 40 mm at the other side

D40 – 1"1/4G = pipe diam. 40 mm at one side and threaded fitting 1"1/4Gas at the other side

TEST RESULTS FOR FILTERS TYPE "D60 AS" AND "D90 AS"

Test Description	*Reference*	*Result*
Pressure drops according to oil flow	**VST-D1-0010**	See diagrams
Compatibility between materials and fluids	**ISO 2943**	Compatible with mineral or synthetic oils
Function testing at 0,5 bar in free air	**VSC-C5-0010**	
Manufacturing conformity check-up	**I09-01-01**	

Table 1 (Tests run on filters type "D60 AS" and "D90 AS")

Notice: in order to use the filter with Glicol, it is neccessary to request a special filter version

INSTALLATION AND MAINTENANCE

MOUNTING POSITION

The filter may be installed in any position along the pipe going from the oil tank to the inlet hole of the hydraulic pump. See Picture 1 (Hydraulic circuit)

CLEANING OR REPLACING THE FILTER CARTRIDGE

Please refer to Picture 5 (Position of filter "AS" series) in order to replace cartridges properly:

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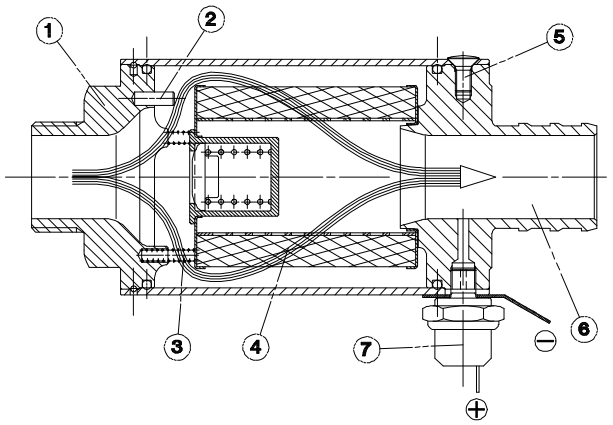
- Remove oil from pipelines connected to the filter
- Loosen pressure switch "**7**"
- Unscrew screws "5" at 120°
- Extract flange "**6**"
- Clean magnets "**2**" from metal particles
- Replace cartridge "**4**" with a spare one. (use original spare cartridges only)
- Insert the new cartridge into proper flange seat "**6**"
- Apply some grase onto pipe flange seat "**6**"
- Check integrity of the "OR" seal and possibly replace it if damaged
- Fit in place flange "**6**" complete with cartridge again
- Tighten screws "**5**" at 120° (possibly apply some drops of loctite on the screws). Tightening must performed in order not to damage the pipe.
- Tighten "**7**"



Picture 5 (Position of filter "AS" series)

Note:

As long as the filter cartridge saturates, when a depression –0,3 in the filter is reached, the electric switch "5" allows to light a lamp placed in the truck cabin to show the obstruction condition of the filter and the need to replace the cartridge. If the light is not seen, when a depression of –0,4 bar is reached, the by-pass valve opens allowing the oil to directly flow to the pump

FILTER SCREWING

To screw the filter "**D60 AS**" in its place, it is necessary to act on the hexagonal seat placed on the flange "**1**" using a key **Ch40**.

To screw the filter "**D60 AS**" in its place, it is necessary to act on the hexagonal seat placed on the flange "**1**" using a key **Ch60**.

Never screw the filter rotating the external pipe. This can endanger the spring function and make the filter cartridge coming out from its place

SWITCH CONNECTION

During the electric connection of the switch, always follow the scheme in the picture Picture 5 (Position of filter "AS" series) with the **positive pole on the switch front**.

It is recommended to protect the switch from splashing water by means of proper rubber or shrinkwrapping sheath. If possible, keep the switch towards the ground.

The max. pressure supported by the switch is 1 bar. (Voltage 12-24V DC)

MAGNETS CLEANING

For the magnets maintenance "**2**", remove the metal particles attracted by the surface of the magnet

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"D90 SC" - "D60 SC" RETURN FILTERS

Picture 6 (Return filter "SC" series)

TECHNICAL SPECIFICATIONS

HOW IT WORKS

As shown in the Picture 9 (Breakdown "SC" Filter), the oil comes in from the threaded flange "**1**", passes through the external section of the filter cartridge, lapping the three magnets "**2**" placed at 120° particelle having the task to capture the metal particles in the oil. The oil runs through the cartridge with a centripetal movement until it is collected in the output flange "**6**"

MAX. WORKING PRESSURE

The filter can bear a max. pressure of **2,5 bar**. Peak pressure **3 bar**.

PRESSURE DROP CURVE OF "D60 SC" AND "D90 SC" FILTERS SERIES

From the tests effected in our laboratory, we got the following pressure drop curves measured at the filter output section "$\Delta p_{c(filtro)}$"

- Picture 7 (Pressure drop filter "D60 SC")
- Picture 8 (Pressure drop filter "D90 SC")

Present diagrmas refer to the following conditions:

- Oil viscosity: ISO WG46
- Temperature 25-30°C
- New cartridge.
- Pressure levels measured in the inlet and outlet sections of the filter.

BY-PASS VALVE

A further safety is represented by the by-pass valve: when in the filter a relative pressure of 2 bar (relative pressure means the pressure difference got in the filtering unit) is reached, the by-pass valve opens allowing the oil to flow towards the tank. See Picture 9 (Breakdown "SC" Filter).

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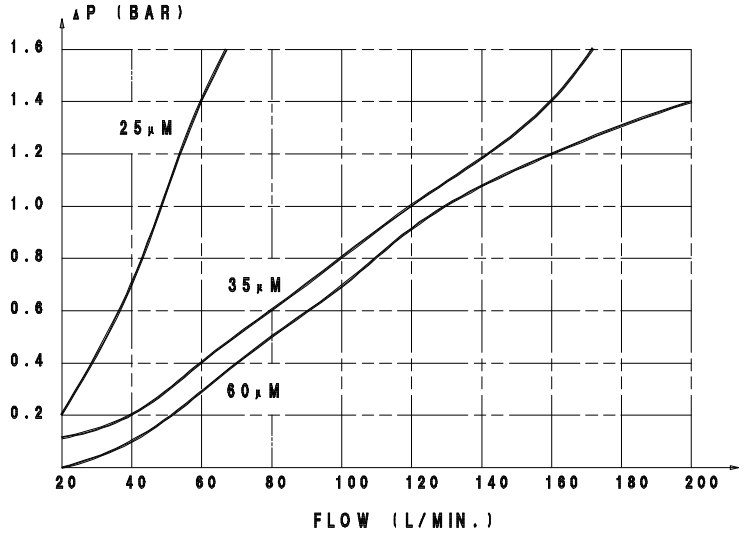
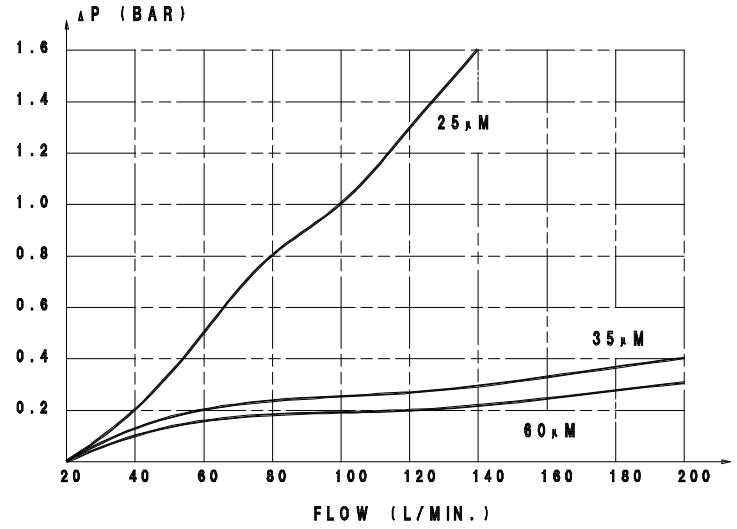


Picture 7 (Pressure drop filter "D60 SC")



Picture 8 (Pressure drop filter "D90 SC")

PRESSURE SWITCH (OPTIONAL)

As shown in Picture 9 (Breakdown "SC" Filter), a pressure transducer "**7**" adjusted at **4 bar** (tolerance +/- 1 bar) can be fitted to the filter, in a way that once the pre-set pressure level is achieved in the filtering section (counterpressure in the exhaust section), a warning signal by means of small lamp or audio tone takes place, informing about the anomalous situation.

Two different types of transducers are available according to the required application:

1) pressure transducer with electrical contact , normally open for external applications
2) Pressure transducer with electrical contact normally open for special applications in oil bath. In this case the transducer is equipped with two wires 400 mm. long.

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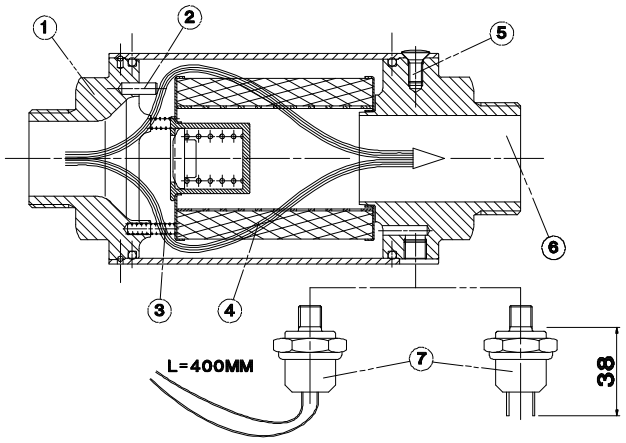

Picture 9 (Breakdown "SC" Filter)

The optional transducer is available in two versions:

1) Transducer in oil bath (with 400 mm. wire)

2) Transducer with "faston" male leads

NOTICE: in case the transducer is required do not forget to mention it when ordering.

TESTS RUN ON FILTERS "D60 SC" AND "D90 SC"

Test description	*Reference*	*Result*
Pressure drops determination	**VST-D1-0010**	See diagram
Verification of material and fluid compatibility	**ISO 2943**	Compatible with mineral or syntetic oils
Function test at 3 bar in free space	**VSC-C5-0010**	
Conformity verification	**VSC-C1-0010**	

Table 2 (Tests run on filters type "D60 SC" and "D90 SC")

NOTICE: in order to use the filter with glicol it is necessary to ask for a special filter version.

INSTALLATION AND MAINTENANCE

MOUNTING POSITION

The filter may be installed in any position along the pipe going from the hydraulic system to the return line to the oil tank. See Picture 1 (Hydraulic circuit). **This pipe section must not be in pressure**.

CLEANING OR REPLACING THE FILTER CARTRIDGE

Please refer to picture 9 for service and/or cartridge replacement and fllow the steps listed here below:

- Remove oil from pipes connected to the filter
- Unscrew the three screws "5" placed at 120°
- Take away flange "6" from its seat
- Clean magnets "2" from metallic particles
- Replace cartridge "4" with a spare one. (make sure to use onli original cartridges)
- Insert the new cartridge into the suitable seat of flange "6"
- Smear some grase onto pipe saet holding flange "6" in place
- Check that the "OR" seal is in good condition otherwise replace it if damaged

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- Fit again flange “6” in place complete with cartridge

Insert screws “5” at 120° in place again (possibly with a few drops of Loctite). Tightening of these screws must be done with sufficent torque without damaging pipe holder.

FILTER SCREWING

To screw the filter “**D60 AS**” in its place, it is necessary to act on the hexagonal seat placed on the flange “**1**” using a key **Ch40**.

To screw the filter “**D60 AS**” in its place, it is necessary to act on the hexagonal seat placed on the flange “**1**” using a key **Ch60**.

Never screw the filter rotating the external pipe. This can endanger the spring function and make the filter cartridge coming out from its place

MAGNETS CLEANING

For the magnets maintenance “**2**”, remove the metal particles attracted by the surface of the magnet.

SWITCH CONNECTION (OPTIONAL)

For outdoor applications it is necessary to waterproof the transducer by means of some plastic cover, or shrink wrap and it is strongly reccomended to fit the transducer douwnward.

For applications with filter in oil bath there is no need for plastic covers.

If pressure in the stage before the filtering unit is exceding the adjustment level, the transducer will close the contact and a warning lamp in the cabin will light on.

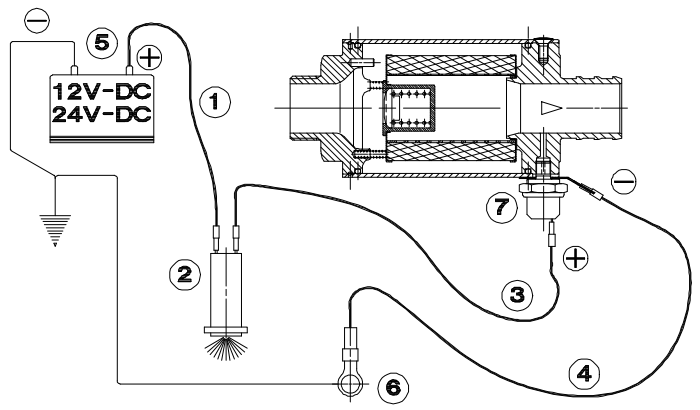

Figura 10 (Schematic diagram of transducer wiring kit)

1) Red cable L=500mm
2) Warning lamp
3) Red cable with protection L=4000mm
4) Black cable with protection L=500 mm
5) Battery
6) Eye ∅=6mm
7) Axial filter series “AS” – “SC”

In Picture 10 (Schematic diagram of transducer wiring) the wiring kit called AVL-96-1012 and AVL-96-1024 is shown.

Such an example of wiring is suitable both for filters of the “AS” and “SC” series.

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"PR300" AND "PR400" INLINE FILTERS

Picture 11 (Inline filter "PR" series)

TECHNICAL SPECIFICATIONS

HOW IT WORKS

As shown in the Picture 12 (Sectional drawing of filter belonging to the "PR" series"), the oil comes in through the threaded flange "**01**", passes through the external section of the filter cartridge and with a centripetal movement is collected in the output threaded flange "**02**".

MAXIMUM WORKING PRESSURE AND EXPLODING PRESSURE OF THE FILTER

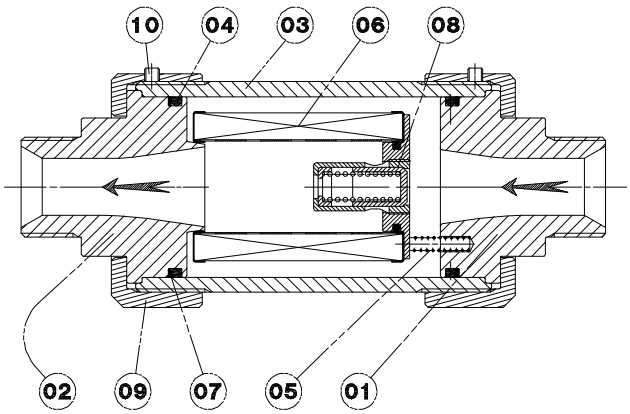
The filter can stand acontinuous maximum working pressure up to 300 bar for versions "PR300" and 350 bar for version "PR400".

Maximum exploding pressure is over 1100 bar.

Maximum collapsing pressure of the cartridge is 20 bar.

BY-PASS VALVE

A further safety is represented by the by-pass valve "**08**" when a relative pressure of **Dp= 6 bar** is reached in the filter, the by-pass valve opens allowing the oil to flow towards the tank. Such valve must be kept in case cartridge is going to be replaced.



Picture 12 (Sectional drawing of filter belonging to the "PR" series")

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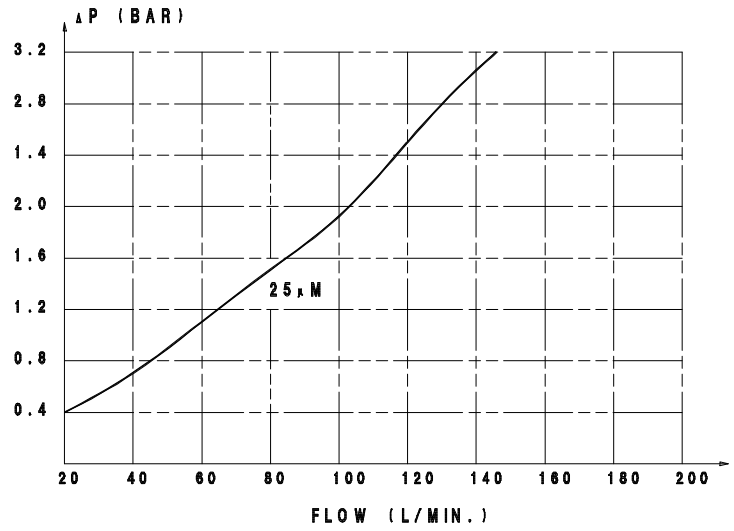
PRESSURE DROP CURVE OF "PR" FILTERS SERIES

From the tests effected in our laboratory, we got the following pressure drop curves measured at the filter output section "$\Delta p_{c(filtro)}$"



Picture 13 (Pressure drop filter "PR")

- Picture 13 (Pressure drop filter "PR")

Diagrams shown here refer to the following test conditions:

- Oil viscosity: ISO WG46
- Temperature 25-30°C
- New cartridge.
- Pressure levels measured in the input and output sections of the filter.

TESTS RUN ON FILTERS "PR300" AND "PR350".

In our test laboratories tests listed in table 3 have been run (on filters type "PR300" and "PR400").

Test description	*Reference*	*Result*
Cartridge Collapsing pressure test	**ISO 2941**	21 bar
Resistance to Axial deformation	**ISO 3723**	No failure at 1100 bar
Intermittent test from 0 up to 420 bar	**VST-F1-0010**	
Load losses according to oil flow	**VST-D1-0010**	See diagrams
Material compatibility with fluids	**ISO 2943**	Compatible with mineral or synthetic base oils.
Functinal test at 350 bar	**VSC-C5-0010**	
Manufacturing conformity verification	**VSC-C1-0010**	

Table 3 (tests run on filters "PR300" and "PR400"

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INSTALLATION AND SERVICE

MOUNTING POSITION

The filter may be installed in any position along the pipe going from the pump to the hydraulic system. See Picture 1 (Hydraulic circuit).

For filter replacement or servicing please refer to Picture 12 (Sectional drawing of filter belonging to the “PR” series”) and follow the next steps:

- Remove oil still present inside filter pipes
- Remove locking grub screw “10”
- Remove flange “**09**”
- Remove flnage “**02**” from its seat
- Remove “by-pass” valve “08” from old cartridge
- Replace cartridge “06” (always use original spare parts)
- Insert “by-pss” valve “08” on the new cartridge “06”
- Insert the new cartridge into flange “02” relevant seat
- Smear some greas onto pipe seat “03”, which is holding flange “02” in place
- Check “OR” and anti-extrusion ring integrity (possibly replace them if damaged)
- Fit flange “02” complete with cartridge in place again
- Screw flange “09” in place again, tightening with proper torque and suitable wrench
- Put grub screw with some Loctite in place again.

MAINTENANCE CYCLE

Unlike the other filter series, the “**PR**” filter is not provided with the electric switch showing the obstruction condition of the filter. We recommend to periodically check the status of the filter cartridge.

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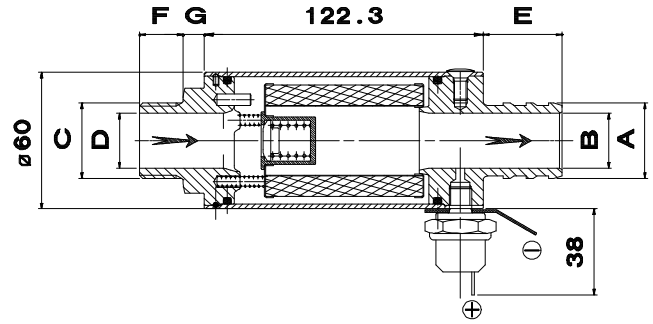
OVERALL DIMENSIONS AND ORDERING CODES FILTER "D60 AS"



Weigth: 0,8 kg

Max. pressure: 1 bar

"D60 AS" technical specifications									
Code	***Description***	***Flow-rate l/min***	***Filtration mm***	***Overall dimension - mm***					
				A	***B***	***C***	***D***	***E***	***F***
0.00.51.004.00	Filter D60 (**1" – D=25**) *with electric switch*	60	90	∅26	∅19	G1"	∅24	35	19
0.00.51.006.00	Filter D60 (**1" – D=32**) *with electric switch*	70	90	∅33	∅24				

G= 9,5 mm - ** The version complete with input cylindrical Pipe ***G= 2,5 mm.***

"D60 AS" spare-parts			
Code	***Description***	***Q.ty***	***Notes***
0.99.00.350.00	El. switch –0,3 bar / 12-24V DC	1	Normally open circuit (NA)
0.99.00.301.00	Filter cartridge D60 - 90 µm rated	1	By-pass valve set at –0,4 bar
0.99.00.302.00	Filter cartridge D60 - 60 µm rated	-	By-pass valve set at –0,4 bar
0.99.00.351.00	By- valve	-	Adjusted at –0,4 bar
0.99.00.352.00	Screw withTSPEI head M6 x 14	3	
0.99.00.353.00	Magnet	3	
0.99.00.354.00	Extention M=3/4" G - F=3/4" G	1	Hexagone L= 31 mm + gauge L= 19 mm
0.99.00.355.00	Extention M=1" G - F=1" G	1	Hexagone L= 31 mm + gaugeL= 19 mm
0.99.00.356.00	Electric kit 12V-DC transducer lamp	-	Voltage 12 V-DC
0.99.00.357.00	Electric kit 24V-DC transducer lamp	-	Voltage 24 V-DC

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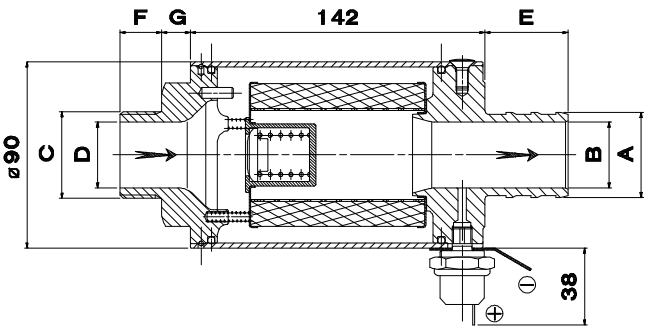
OVERALL DIMENSIONS AND ORDERING CODES FILTER "D90 AS"



Weigth: 1,7 kg

Max. pressure: 1 bar

"D90 AS" technical specifications									
Code	***Description***	***Flow-rate l/min***	***Filtration mm***	***Overall dimension - mm***					
				A	***B***	***C***	***D***	***E***	***F***
0.00.51.012.00	Filter D90 – (**1"1/4 – D=40**) *with electric switch*	90	90	∅41	∅32	G1"1/4	∅32	40	20
0.00.51.014.00	Filter D90 – (**1"1/2 – D=45**) *with electric switch*	100	90	∅46	∅37	G1"1/2	∅37	45	
0.00.51.015.00	Filter D90 – (**1"1/4 – 1"1/4**) *with electric switch*	90	90	Gc1"1/4	∅32	G1"1/4	∅32	36	
0.00.51.016.00	Filter D90 – (**1"1/2 – 1"1/2**) *with electric switch*	100	90	Gc1"1/2	∅37	G1"1/2	∅37		
G = 14 mm - ** For version with double Pipe holder: **G= 2,5** mm									

"D90 AS" spare-parts			
Code	***Description***	***Q.ty***	***Notes***
0.99.00.350.00	El. switch –0,3 bar / 12-24V DC	1	Normally open circuit (NA)
0.99.00.303.00	Filter cartridge D60 - 90 µm rated	1	By-pass valve set at –0,4 bar
0.99.00.304.00	Filter cartridge D60 - 60 µm rated	-	By-pass valve set at –0,4 bar
0.99.00.351.00	By-pass valve	-	Adjusted a –0,4 bar
0.99.00.352.00	Screw withTSPEI head M6 x 14	3	
0.99.00.353.00	Magnet	3	
0.99.00.358.00	Extention M=1-1/2" G - F=1-1/2" G	1	Hexagone L= 33 mm + Gauge L= 22 mm
0.99.00.359.00	Extention M=1-1/4" G - F=1-1/4" G	1	Hexagone L= 32 mm + Gauge L= 21 mm
0.99.00.356.00	Electric kit 12V-DC transducer lamp	-	Voltage 12 V-DC
0.99.00.357.00	Electric kit 24V-DC transducer lamp	-	Voltage24 V-DC

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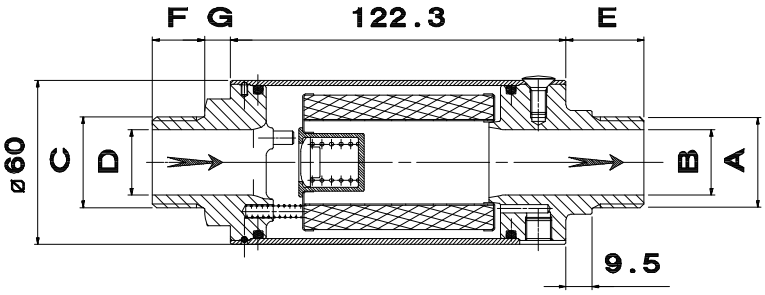
OVERALL DIMENSIONS AND ORDERING CODES FILTER "D60 SC"



Weigth: ***0,8*** **kg**

Max. pressure: 2,5 bar

Switch

LEL-P1-1845 / LEL-P1-1855

Optional

"D60 SC" technical specifications

Code	Description	Flow-rate l/min	Filtration mm	Overall dimension - mm					
				A	B	C	D	E	F
0.00.51.018.00	*Filter D60 (**G3/4" – Gc3/4"**) 35mm*	80	35	Gc3/4"	∅19	G3/4"	∅19	29	19
0.00.51.019.00	*Filter D60 (**G3/4" – Gc3/4"**) 25mm*	60	25						
0.00.51.021.00	*Filter D60 (**G1" – Gc1"**) 35mm*	120	35	Gc1"	∅24	G1"	∅24		
0.00.51.022.00	*Filter D60 (**G1" – Gc1"**) 25mm*	80	25						
0.00.51.039.00	*Filter D60 (**G1" – D32**) 25mm*	80	25	∅33	∅24	G1"	∅24	35	
0.00.51.040.00	*Filter D60 (**G1" – D32**) 35mm*	120	35						
0.00.51.041.00	*Filter D60 (**G3/4" – D25**) 35mm*	80	35	∅26	∅19	G3/4"	∅19		
0.00.51.042.00	*Filter D60 (**G1" – D25**) 35mm*	100	35			G1"	∅24		

G= 9,5 mm - Gc = Conical Gas Gauge – G = Cylindric Gas Gauge

"D60 SC" spare-parts

Code	Description	Q.ty	Notes
0.99.00.305.00	Filter cartridge D60 - 60 µm rated	1	By-pass valve set at 2 bar – INOX
0.99.00.306.00	Filter cartridge D60 - 35 µm rated	1	By-pass valve set at 2 bar – INOX
0.99.00.307.00	Filter cartridge D60 - 25 µm rated	1	By-pass valve set at 2 bar – PAPER
0.99.00.362.00	By-pass vale	-	Adjusted at 2 bar
0.99.00.352.00	Screw withTSPEI head M6 x 14	3	
0.99.00.360.00	Pressure switch 4 bar / 12-24V DC	1	Normally open electric contact N.A. Faston 6
0.99.00.361.00	Pressure switch 4 bar / 12-24V DC	1	ContactN.O. vacuum protected wires 400mm
0.99.00.353.00	Magnet	3	
0.99.00.354.00	Extention M=3/4" G - F=3/4" G	1	Hexagone L= 31 mm + gauge L= 19 mm
0.99.00.355.00	Extention M=1" G - F=1" G	1	Hexagone L= 31 mm + gaugeL= 19 mm

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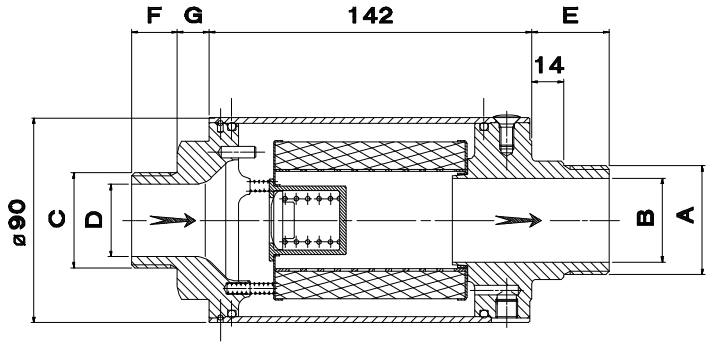
OVERALL DIMENSIONS AND ORDERING CODES FILTER "D90 SC"



Weigth: 1,7 kg

Max. pressure: 2,5 bar

Switch

LEL-P1-1845 / LEL-P1-1855

Optional

"D90 SC" technical specifications									
Code	***Description***	***Flow-rate l/min***	***Filtration mm***	***Overall dimension - mm***					
				A	***B***	***C***	***D***	***E***	***F***
0.00.51.024.00	*D90 (**G1"1/4 – Gc1"1/4**) 35mm*	120	35	Gc1" 1/4	∅32	G1" 1/4	∅32	36	20
0.00.51.025.00	*D90 (**G1"1/4 – Gc1"1/4**) 25mm*	100	25						
0.00.51.027.00	*D90 (**G1"1/2 – Gc1"1/2**) 35mm*	160	35	Gc1" 1/2	∅37	G1" 1/2	∅37		
0.00.51.028.00	*D90 (**G1"1/2 – Gc1"1/2**) 25mm*	120	25						
0.00.51.043.00	*D90 (**G1"1/4 – D40**) 35mm*	120	35	∅41	∅32	G1" 1/4	∅32	40	
0.00.51.044.00	*D90 (**G1"1/4 – D40**) 25mm*	100	25						
0.00.51.045.00	*D90 (**G1"1/2 – D45**) 35mm*	160	35	∅46	∅37	G1" 1/2	∅37	45	
0.00.51.046.00	*D90 (**G1"1/2 – D45**) 25mm*	120	25						
0.00.51.050.00	*D90 **FEMALE** (**G1"1/4 – Gc1"1/4**) 35mm*	120	35	∅60	G1" 1/4	∅53	G1" 1/4	15	20
0.00.51.051.00	*D90 **FEMALE** (**G1"1/4 – Gc1"1/4**) 25mm*	100	25						

G = 14 mm - Gc = Conic Gas Gauge – G = Cylindric Gas Gauge

Ricambi "D90 SC" spare-parts			
Code	***Description***	***Q.ty***	***Notes***
0.99.00.308.00	Filter cartridge D60 - 60 µm rated	1	By-pass valve set at 2 bar – INOX
0.99.00.309.00	Filter cartridge D60 - 35 µm rated	1	By-pass valve set at 2 bar – INOX
0.99.00.310.00	Filter cartridge D60 - 25 µm rated	1	By-pass valve set at 2 bar – PAPER
0.99.00.362.00	By-pass valve	-	Adjusted at 2 bar
0.99.00.352.00	Screw withTSPEI head M6 x 12	3	
0.99.00.360.00	Pressure switch 4 bar / 12-24V DC	1	Normally open electric contact N.A. Faston 6
0.99.00.361.00	Pressure switch 4 bar / 12-24V DC	1	Normally open vacuum protected wires 400mm
0.99.00.353.00	Magnet	3	
0.99.00.358.00	Extention M=1-1/2" G - F=1-1/2" G	1	Hexagone L= 33 mm + Gauge L= 22 mm
0.99.00.359.00	Extention M=1-1/4" G - F=1-1/4" G	1	Hexagone L= 32 mm + Gauge L= 21 mm

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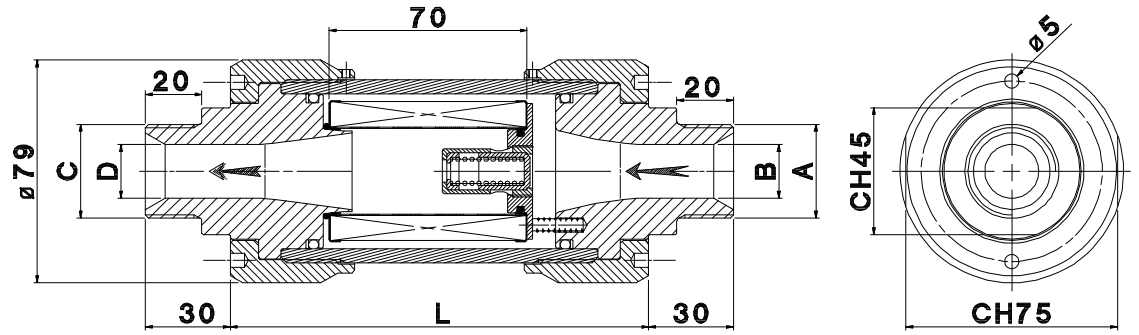
OVERALL DIMENSIONS AND ORDERING CODES "PR300"



"PR300" technical specifications										
Code	***Description***	***Flow l/min***	***Filtration mm (nom.)***	***Max Press. bar***	***Weigth kg***	***Overall dimension - mm***				
						L	***A***	***B***	***C***	***D***
0.00.51.052.00	*FLT.PRS."PR300-070-**MA**" 10um E= 1" G - U= 1" G*	70	10	300	2,96	159	1" G	∅19	1" G	∅19
0.00.51.053.00	*FLT.PRS."PR300-070-**MA**" 25um E= 1" G - U= 1" G*	80	25							
0.00.51.054.00	*FLT.PRS."PR300-070-**MA**" 35um E= 1" G - U= 1" G*	90	35							

******* The female filters "**FM**" have the total lengh*: 159+10+10 = **179 mm**

"PR" spare-parts			
Code	***Description***	***Q.ty***	***Notes***
0.08.02.159.00	Seal OR 4187	2	
0.08.99.014.00	Anti extrusion for OR 4187	2	
0.99.00.363.00	By-Pass valve	1	Adjusted Δp 6 bar
0.99.00.364.00	By-Pass valve adaptor	1	
0.08.02.160.00	seal OR 3093	1	
1.28.01.510.00	Spring	3	

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"PR" Filter cartridge			
Code	***Description***	***Q.ty***	***Notes***
0.99.00.365.00	Filter cartridge 070 – 60 µm rated	1	INOX baffle – Δp collapsing at 21 bar
0.99.00.366.00	Filter cartridge 070 – 35 µm rated	1	INOX baffle – Δp collapsing at 21 bar
0.99.00.367.00	Filter cartridge 070 – 25 µm rated	1	PAPER baffle - Δp collapsing at 21 bar
0.99.00.368.00	Filter cartridge 070 – 10 µm rated	1	PAPER baffle - Δp collapsing at 21 bar
0.99.00.369.00	Filter cartridge 070 – 06 µm rated	1	FIBER baffle - Δp collapsing at 21 bar
0.99.00.370.00	Filter cartridge 140 – 60 µm rated	1	INOX baffle – Δp collapsing at 21 bar
0.99.00.371.00	Filter cartridge 140 – 35 µm rated	1	INOX baffle – Δp collapsing at 21 bar
0.99.00.372.00	Filter cartridge 140 – 25 µm rated	1	PAPER baffle - Δp collapsing at 21 bar
0.99.00.373.00	Filter cartridge 140 – 10 µm rated	1	PAPER baffle - Δp collapsing at 21 bar
0.99.00.374.00	Filter cartridge 140 – 06 µm rated	1	FIBER baffle - Δp collapsing at 21 bar

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